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Letter of Transmittal

Date 19 April 2002
File Number 28882-002
From Scott P. Zachary

To Boeing Realty Corporation
3855 Lakewood Blvd
Building 1A, MC D001-0097
Long Beach, CA 90846

Attention Ms. Stephanie Sibbett

Copy to N/A

Subject Parcel C-Lot 7

Copies	Date	Description
3	3/29/02	Parcel C-Lot 7 Closure Report

Transmitted via ☐ First class mail ☒ Overnight express ☐ Hand delivery ☐ Other

Remarks

Stephanie

Per our discussion, following are 3 copies of the Final Parcel C-Lot 7 Closure Report for the Former C-6 Facility.

Regards-Scott

A handwritten signature in black ink, appearing to be 'S. Zachary', written over a horizontal line.

**SHALLOW SOIL CLOSURE
LOT 7, PARCEL C**

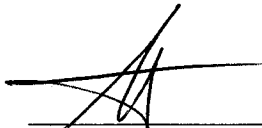
**BOEING REALTY CORPORATION
FORMER C-6 FACILITY
LOS ANGELES, CALIFORNIA**

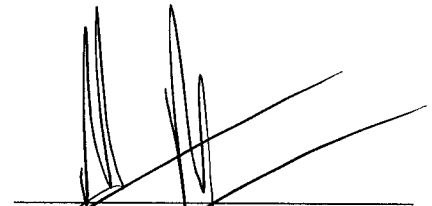
Prepared for

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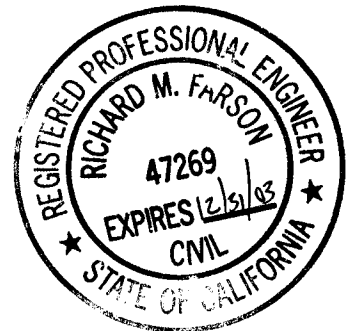


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EXECUTIVE SUMMARY

Boeing Realty Corporation (BRC) has completed their source identification, investigation, and remediation of shallow soil within Parcel C. These activities included:

- Identifying environmental features for investigation;
- Performing the soil investigation;
- Removing shallow occurrences of elevated soil impacts.

Lot 7 comprises approximately 4.52 acres of the 50.5-acre Parcel C. Based on the closure evaluation presented herein, it is recommended that the Regional Water Quality Control Board – Los Angeles Region (LARWQCB) issue a “no further action” letter for shallow soil impacts at Lot 7 of Parcel C based on the following information and conclusions:

- The vertical and lateral extent of soil impacts related to on-site operations within Lot 7 of Parcel C have been delineated.
- Three areas of elevated shallow soil impacts identified at Lot 7 of Parcel C were of relatively limited extent, and had detectable concentrations of petroleum hydrocarbons, arsenic, and volatile organic compounds (VOCs).
- These three areas of elevated shallow soil impacts were remediated by excavation. Approximately 300 cubic yards of soil were removed from four excavations in Lot 7 of Parcel C.
- Residual concentrations of VOCs, metals and petroleum hydrocarbons remaining in shallow soil are considered to be low or below laboratory reporting limits.
- Based on the data from groundwater monitoring well TMW-16 in Lot 7, groundwater impacts above California MCLs were not detected within Lot 7.

Based on the results of the source identification, soil investigation, and remediation activities, shallow soil in Lot 7 of Parcel C can be closed and Lot 7 is suitable for redevelopment for industrial/ commercial use.

1.0 BACKGROUND

Haley & Aldrich, Inc. (Haley & Aldrich) has conducted an evaluation for recommended closure of the shallow soil at Lot 7 (soil at depths less than 12 feet below ground surface [bgs]) of Parcel C. Parcel C is one of four parcels (Parcels A through D) of the BRC Former C-6 Facility (Facility), at 19503 South Normandie Avenue, in Los Angeles, California (Figure 1). This shallow soil closure request for Lot 7 of Parcel C has been prepared to facilitate expedited City of Los Angeles redevelopment needs of Lot 7.

1.1 Facility Location

The Facility is located at 19503 South Normandie Avenue, in Los Angeles, California. The approximate location of Lot 7 of Parcel C is depicted in Figure 2. The address of Lot 7 is 19320 Harbortgate Way.

1.2 Site Land Use History

Parcel C consists of approximately 50.5 acres of the 170-acre Facility and is bordered by Parcel A and West 190th Street to the north; South Normandie Avenue, commercial and residential properties to the east; Parcel D, Montrose Chemical and residential properties to the south; and Parcel B, Western Avenue, Capitol Metals, and Lockheed Martin International Light Metals (ILM) to the west. The Facility was first developed by the Defense Plant Corporation in 1941 as part of an aluminum production plant and was operated by the Aluminum Corporation of America until late 1944 (Camp, Dresser & McKee, 1991). Aerial photographs indicate that the Facility property was farmland prior to the 1940s. From 1944 until 1948, the Facility property was used for warehousing by the War Assets Administration. In 1948, the Columbia Steel Company acquired the Facility. In March 1952, the U.S. Navy purchased the Facility and established Douglas Aircraft Company (DAC) as the contractor and operator of the Facility for the manufacture of aircraft and aircraft parts. DAC purchased the Facility from the Navy in 1970 (Camp, Dresser & McKee, 1991). DAC and its successor, McDonnell Douglas Corporation (created by the 1967 merger of DAC and McDonnell Aircraft Company), owned and operated the Facility and continued manufacturing aircraft components until 1992. The Boeing Company took ownership of the Facility in 1997 when it merged with McDonnell Douglas Corporation.

Although most manufacturing operations ceased in 1992, a limited amount of assembly and warehousing continued through the mid-1990s. The Facility is currently closed, and the buildings have been demolished and removed from the property. Shallow soil in Parcels A, B and D are closed and these parcels have been sold. Parcels A and B have been partially or fully redeveloped; Parcels C and D are currently vacant. Knox Street has recently been extended west to east across Parcel C, forming the southern boundary of Lot 7.

1.3 Description of Lot 7

Lot 7 currently encompasses approximately 4.52 acres and formerly included all or portions of four buildings (Buildings 20, 29, 32, and 58) as shown on Figure 2. The use of these buildings and associated environmental features are described below. Information present in this section is based on a review of reports, drawings, and photographs provided by BRC and observations made during site visits and demolition activities.

Building 20

Building 20 served as a vehicle maintenance area (Kennedy/Jenks Consultants [KJC], 2000a). Environmental features included a battery recharging area, a 3-stage clarifier draining a steam cleaning booth, an above ground motor oil tank, hydraulic lifts and a condensation pit (Figure 3). Outside the building, underground storage tanks (USTs) that dispensed unleaded and regular gasoline from a pump island were also identified as environmental features.

Building 29

Building 29 was used as a machine and carpentry shop (KJC, 1996). Environmental features included a clarifier and a UST (Figure 3).

Building 32

Building 32 was built in the 1980s and contained a cafeteria and meeting hall (KJC, 2000a). A relatively small salvage yard was located outside the building to the north. Environmental features included a waste transfer area, paint storage, oil storage and USTs located immediately north, west and southwest of Building 32, respectively (Figure 3).

Building 58

Building 58 was reported by BRC to have been a cantilevered carport-type storage building used to stored trailers and vehicles. A pump house (Building 23) was located to the east of Building 58 (Figure 3). No environmental features were identified in these buildings.

1.4 Previous UST Investigation Results

A total of 10 regulated USTs were documented in Lot 7. These USTs are referred to as 1T, 2T, 3T, 4T, 5T, 6T, 7T, 8T, 32T, and 88-01 and are shown on Figure 4. Table 1 provides a summary of the Parcel C, Lot 7 former USTs. The locations in Figure 4 are based on a Woodward-Clyde report (Woodward-Clyde, 1987). The 10 documented USTs have been removed and regulation of the UST cases is being addressed by the LARWQCB. For the 10 USTs, environmental issues were addressed in previous investigations during or shortly after the actual UST removals, which are summarized in Table 1. Table 1 also lists the compounds that were detected and their respective maximum concentrations. No significant

environmental issues were identified for the 10 former USTs in Lot 7. Closure requests have been submitted for the 10 USTs and are currently under review by the LARWQCB.

1.5 Environmental Features

The Parcel C Lot 7 soil investigation focused on environmental features (EFs) identified from a review of historical aircraft and earlier manufacturing operations. The EFs in Lot 7 of Parcel C are shown on Figure 3. Information for EF U6 was not readily available; however, UST 8T was reportedly to be approximately 100 feet south of the U6 location and may correspond to U6. Also, EF U7 was tentatively classified as a UST. Upon further review, it was determined not to be a UST as defined under California law.

1.6 Geologic and Hydrogeologic Setting

The Facility is underlain by the Lakewood Formation that typically includes the Semi-Perched Aquifer, the Bellflower Aquitard and the Gage Aquifer. The Bellflower Aquitard is described as a heterogeneous mixture of continental, marine and wind-blown sediments, mainly consisting of clays with sandy and gravely lenses (Department of Water Resources, 1961).

Prior to redevelopment, Parcel C, including Lot 7, was underlain by up to ten feet of artificial fill. The fill is heterogeneous in composition and varies in thickness across the parcel. The relatively fine-grained Bellflower Aquitard is the shallowest natural stratigraphic unit encountered at Parcel C. It is continuous across the area, but it thins to the northwest and southwest. The Bellflower Aquitard consists of laminated to massive yellowish brown silt and clay with local sands. It extends from directly beneath the fill to approximately 125 feet bgs at Parcel C.

2.0 FIELDWORK, SAMPLING, ANALYSIS AND RESULTS

A detailed description of the investigation approach, results and remediation for the entire Parcel C is presented in the Report for Soil Investigation, Soil Remediation and Screening-level Risk Assessment, Parcel C (Haley & Aldrich, Inc., 2002). A summary of the investigation and results for Lot 7 of Parcel C is presented below.

2.1 Soil Gas

Fifteen soil gas samples were collected in Lot 7 by KJC from approximately 10 feet bgs and analyzed for VOCs by Environmental Support Technologies' mobile laboratory using the Well Investigation Protocol (WIP) (Figure 5). Ten of the 15 soil gas samples were reported to have no detectable concentrations of VOCs. Five soil gas samples were reported to have low VOC concentrations of up to 4 micrograms per liter ($\mu\text{g/l}$) of vapor (Figure 5). The VOCs that were detected include trichloroethene (TCE), 1,1-dichloroethene (DCE), 1,1,1-trichloroethane (TCA), toluene, trichlorofluoromethane, and o-xylene (Table 2).

2.2 Shallow Soil Investigation Results

From 1996 to 2001, a total of 97 soil borings were drilled and 250 soil samples were collected in Lot 7 by Haley & Aldrich, Inc., KJC, Montgomery Watson, and Tait & Associates, Inc. The soil samples were analyzed by California-certified analytical laboratories (Severn Trent Laboratories and Orange Coast Analytical) to evaluate the presence of soil impacts. Based on the analytical data from the current and previous investigations, VOC, total petroleum hydrocarbons (TPH), polycyclic aromatic hydrocarbons (PAHs), and arsenic impacts were detected at elevated concentrations at three locations in Lot 7 (see Figures 7 through 10). Laboratory analytical results for all compounds analyzed are included in Table 3.

VOCs detected in Lot 7 of Parcel C included: TCE, 1,1,1-TCA, 1,1-DCA, 1,2,3-trichlorobenzene, 1,2,4-trichlorobenzene, 1,2,4-trimethylbenzene, 2-butanone, acetone, ethylbenzene, methyl tertiary butyl ether (MTBE), m,p-xylene, total xylenes, toluene, and tetrachloroethene (PCE). TCE was the primary VOC detected. Figure 6 illustrates the pre-remediation concentrations of TCE detected in Lot 7 in the Building 32 (32-4) area.

TPH impacts including PAHs were detected at elevated concentrations in the M/L-23 area and are shown on Figures 7 and 9. These impacts occurred at a maximum depth of 9 feet bgs and were adjacent to a former oil pipeline.

Arsenic was detected at elevated concentrations in the M/L-23 area and the 2BB-5-20 area, north of former Building 32. Figures 9 and 10 illustrate the arsenic impacts in the M/L-23 and 2BB-5-20 areas respectively.

2.3 Shallow Soil Remediation

Guided by the results of the investigation and confirmation program, approximately 300 cubic yards of soil was excavated from three locations on Lot 7 (Figures 7 through 10) where elevated concentrations of VOCs, TPH/PAH, and arsenic were detected. These excavations are discussed below.

Building 32 (32-4)

Remediation excavation area 32-4 contained elevated levels of TCE (up to 2,100 micrograms per kilogram [$\mu\text{g/kg}$]) at approximately one foot bgs (Figure 8). Approximately 50 cubic yards of soil were excavated to remediate this limited VOC-impacted area. The excavation was approximately 11 feet by 33 feet by 4.5 feet deep. Six sidewall confirmation samples (Build-32-4-E-1 through Build-32-4-E-6) were obtained and contained maximum residual TCE concentrations up to 150 $\mu\text{g/kg}$.

Building 20 (M/L-23)

Remediation excavation area M/L-23 contained soil impacts consisting of TPH, arsenic, benzo(a)anthracene, benzo(a)pyrene and 2-methylnaphthalene as listed in Section 2.2 (Figure 9). Approximately 200 cubic yards of soil were removed from this location from an area measuring approximately 70 feet by 20 feet with depths of up to approximately 9 feet bgs. A total of four sidewall confirmation samples (Build-20-M-23-032101-3, Build-20-M-23-032101-5, Build-20-L-23-032101-6, and Build-20-L-23-050301-8) did not contain TPH and had concentrations of inorganic chemicals within natural background ranges. Confirmation samples obtained at the base of the excavation (Build-20-L-052301-10) had residual TPH concentrations of up to 200 milligrams per kilogram (mg/kg).

Building 32 (2BB-5-20)

Remediation excavation area 2BB-5-20 contained elevated levels of arsenic at approximately one foot bgs in two locations (Figure 10). Approximately 50 cubic yards of arsenic-impacted soils were removed from the two excavations in the 2BB-5-20 area that measured approximately 20 feet by 15 feet and approximately 8 feet by 8 feet and both extended to a depth of approximately 4 feet bgs. Confirmation samples obtained from the excavations (Build-32-2-BB-5-20-5, Build-32-2-BB-5-20-6, Build-32-2-BB-5-20-7, Build-32-2-BB-5-20-8, and Build-32-2-BB-5-20-12) contained maximum arsenic concentrations of 6.5 mg/kg . To verify that no other elevated arsenic concentrations existed between the two excavations, the area was further delineated with 13 direct-push borings (PD-83 through PD-95) to approximately 3 feet bgs. The maximum residual concentration of arsenic in the confirmation samples was 18.8 mg/kg at 3 feet bgs in direct-push boring PD-89.

2.4 Backfill and Grading Activities

Upon completion of remedial excavation and confirmation sampling, the excavations were graded or backfilled with clean import fill. Prior to acceptance of import fill, the import site was screened for industrial use. If no industrial use was evident, soil samples were collected to verify no impacts were present. Only fill soils that passed this process were accepted.

Following excavation backfilling, Lot 7 was graded for redevelopment. As part of the grading process, the lot grade was subsequently elevated by approximately 3.5 feet through the addition of approximately 8,000 yards of clean soil import fill as discussed above.

2.5 Post-Remediation Residual Concentrations in Lot 7

The maximum post-remediation residual concentrations of compounds detected in shallow soil in Lot 7 of Parcel C are listed below. A "J" flag indicates that the laboratory estimated the reported concentration since the concentration was below the reporting limit, but above the method detection limit.

VOCs

- 1,1,1-TCA, 1.8 J µg/kg;
- 1,1,-DCA, 16 µg/kg;
- 1,2,3-trichlorobenzene, 3.9 µg/kg;
- 1,2,4-trichlorobenzene, 4 µg/kg;
- 1,2,4-trimethylbenzene, 5.3 µg/kg;
- 2-butanone, 16 J µg/kg;
- acetone, 61 µg/kg;
- ethylbenzene, 9.7 µg/kg;
- m,p-xylene, 6.4 µg/kg;
- MTBE, 390 µg/kg;
- total xylenes, 86 µg/kg;
- toluene, 7.7 µg/kg;
- TCE, 150 µg/kg; and
- PCE, 15 µg/kg.

Polycyclic Aromatic Hydrocarbons (PAHs)

- Benzo(a)anthracene, 21 J µg/kg;
- Benzo(b)fluoranthene, 14 J µg/kg;
- Benzo(g,h,i)perylene, 16 µg/kg;
- Benzo(k)fluoranthene, 4.6 J µg/kg;
- Chrysene, 23 J µg/kg;
- Dibenzo(a,h)anthracene, 25 J µg/kg;

- Fluoranthene, 16 J $\mu\text{g}/\text{kg}$;
- Indeno (1,2,3-cd)pyrene, 8.5 J $\mu\text{g}/\text{kg}$; and
- Pyrene, 8.7 J $\mu\text{g}/\text{kg}$.

Petroleum Hydrocarbons

- TPH, 1,500 mg/kg.

Inorganic compounds

- Arsenic, 18.8 mg/kg.

Figures 11, 12, and 13 illustrate the post-remediation residual concentrations of VOCs, PAHs, and arsenic.

3.0 SUMMARY OF PARCEL C BELLFLOWER AQUITARD GROUNDWATER CONDITIONS

Groundwater quality in Parcel C has been characterized through the installation and sampling of 26 groundwater monitoring wells and 41 groundwater grab samples since 1987. Groundwater quality for the Facility including Parcel C is presented in the Groundwater Monitoring Report-Annual Event, January/February 2001 (Haley & Aldrich, 2001).

The uppermost groundwater at the Facility appears to be under water table conditions at depths of 60 to 70 feet bgs in relatively permeable sediments of the Bellflower Aquitard. Groundwater flow within the Bellflower Aquitard is predominantly to the south-southeast under a horizontal hydraulic gradient of approximately 0.001 feet/foot and flows at a rate of approximately 10 to 20 feet per year (KJC, 2000b).

The VOC impacts in groundwater appear to originate from two areas of Parcel C neither of which are located on Lot 7: the former Building 1/36 chemical storage area around groundwater monitoring well TMW-2, and the former Building 2 clarifier and machining area in the vicinity of TMW-3 (Figures 14, 15, and 16). As shown in Figures 11, 12 and 13, one groundwater monitoring well (TWM-16) is on Lot 7 of Parcel C. Based on the results from the January 2001 groundwater sampling event, TCE, PCE, toluene, and total xylenes were detected in groundwater monitoring well TMW-16. The compound detected at the highest concentration is toluene at 12 µg/l. Groundwater samples collected since 1999 from TMW-16 in Lot 7 did not have analyte concentrations above California maximum contaminant levels (MCLs). It is therefore likely that groundwater beneath Lot 7 does not exceed MCLs for compounds of potential concern. This corroborates the soil investigation results.

4.0 CONCLUSIONS

Lot 7 of Parcel C has undergone a comprehensive investigation by collecting and analyzing soil and soil gas samples from probes, borings and grab samples at targeted EFs and distributed throughout the surrounding open areas. Shallow soil remediation was conducted and shallow impacts have been delineated and remediated such that the upper 12 feet of soil at Lot 7 of Parcel C is suitable for closure. Accordingly, no additional investigations or remedial actions are recommended in shallow soil. Key conclusions from this project are:

- The vertical and lateral extent of soil impacts related to on-site operations within Lot 7 of Parcel C have been delineated.
- Three areas of elevated shallow soil impacts identified at Lot 7 of Parcel C were of relatively limited extent, and had detectable concentrations of petroleum hydrocarbons, arsenic, and VOCs.
- These areas of elevated shallow soil impacts were remediated by excavation and approximately 300 cubic yards of soil were removed from four excavations in Lot 7 of Parcel C.
- Residual concentrations of VOC, petroleum hydrocarbons, and metals remaining in shallow soil are considered to be low or below laboratory detection limits.
- Based on the data from TMW-16 in Lot 7, groundwater impacts above California MCLs were not detected within Lot 7.

Based on the investigation results, shallow soil can be closed with no further investigation or remedial action. As a result, Lot 7 of Parcel C is suitable for redevelopment for commercial and/or industrial use.

5.0 REFERENCES

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